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REPORT DOCUMENTATION PAGE

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1. REPORT NUMBER ACN 78017	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) THE RESTLESS CONTEXT: MILITARY INSTITUTIONAL AWARENESS OF SOCIAL CHANGE		5. TYPE OF REPORT & PERIOD COVERED Military Issues Research Memoranda
7. AUTHOR(s) Dr. Anthony L. Wermuth		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS Strategic Studies Institute US Army War College Carlisle Barracks, PA 17013		8. CONTRACT OR GRANT NUMBER(s)
11. CONTROLLING OFFICE NAME AND ADDRESS		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		12. REPORT DATE 3 April 1978
		13. NUMBER OF PAGES 32
		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Army Institute of the Future - Future Military Developments - Futurism - Organizational Dynamics - Organizational Effectiveness - Monitoring Social Change - Research and Study - Army Future Problems - Suggestions for Research into Army Problems - Early Warning of Social Change		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This paper proposes the establishment of an agency, the Army (or the mili- tary) Institute of the Future, to perform a warning function concerning future social change that may achieve substantial impacts upon the American military institution. Potential impacts arising from the dynamics of modern life are many, multi- lateral, and comprehensive, especially in two areas: (1) technology and (2) man-		

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power and organization. The time has come to establish a systematic monitoring agency to collect and interrelate pertinent data across the range of important human activities--technology, the arts, the natural sciences, the humanities, and the social and behavioral sciences. Limited devices perform this function now, but partially, sporadically, somewhat whimsically, and, beyond doubt, unsystematically.

Part of the reason for lagging effectiveness is, according to qualified task forces, that the "people research" systems of the armed forces underfinanced in general, overstaffed by (quantitative) psychologists, negligent of broad study transcending the problems of one service, still dominated by scientists whose expertise lies in weaponry, and suffering from short-range viewpoints.

The Army has recently devoted considerable resources to initiating a network of problemsolving nodes aimed at approaching problems and devoted to OE--"Organizational Effectiveness." It is a step in the right direction, but only a modest step. A Military Institute of the Future should be able to subsume OE and perform with a much more extensive purview.

People and organizational affairs are proliferating as problems, of which dozens are identified herein. Nothing short of systematic and comprehensive surveillance will permit coping with this proliferation of knowledge and insights. Successful precedents have been established for entire centers and industries--e.g., the insurance industry, Congress, 100 of the largest corporations, over 20 states and cities, and numerous campuses. The challenge has passed beyond the question of whether such an Institute should be established; the question now is when.

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ADA 054367
L9546044H

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3 APRIL 1978

ACN 78017

THE RESTLESS CONTEXT: MILITARY INSTITUTIONAL AWARENESS OF SOCIAL CHANGE



MILITARY ISSUES RESEARCH MEMORANDUM

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**STRATEGIC STUDIES INSTITUTE
US ARMY WAR COLLEGE
Carlisle Barracks, Pennsylvania**

**THE RESTLESS CONTEXT: MILITARY
INSTITUTIONAL AWARENESS OF SOCIAL CHANGE**

by

Anthony L. Wermuth

3 April 1978

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The views of the author do not purport to reflect the position of the Department of the Army or Department of Defense.

FOREWORD

Noting the dominance since World War II of the hard sciences and of technology in military research budgets, to the disadvantage of research and study of people, behavior, and organizations, this memorandum recommends the establishment of an Army Institute of the Future (AFI) or a Military Institute of the Future (MFI). One great challenge is the knowledge explosion in progress, in which we have difficulty in keeping abreast of new knowledge that we might well use if we knew about it. Many industries and institutions are establishing effective filtering agencies to extract from the passing context data of direct interest to their special institution. Similarly, AFI would systematically monitor the comprehensive activities occurring in American society, culture, technology, organizational dynamics, and arts and humanities, in order to acquire, organize, and analyze developments of potential relevance to the Army, and to distribute the results to Army units and agencies that might profit from their use. The two key terms characterizing the monitoring responsibilities of such an Institute would be *comprehensive* and *systematic*.

The Military Issues Research Memoranda program of the Strategic Studies Institute, US Army War College, provides a means for timely dissemination of analytical papers which are not necessarily constrained by format or conformity with institutional policy. These memoranda are prepared on subjects of current importance in areas related to the author's professional work or interests.

This memorandum was prepared as a contribution to the field of national security research and study. As such, it does not necessarily reflect the official view of the College, the Department of the Army, or the Department of Defense.



ROBERT G. YERKS
Major General, USA
Commandant

BIOGRAPHICAL SKETCH OF THE AUTHOR

DR. ANTHONY L. WERMUTH joined the Strategic Studies Institute in 1974. He holds masters' degrees from Columbia University in English and from George Washington University in international affairs and a doctorate from Boston University in political science. A West Point graduate, Dr. Wermuth's military assignments over 32 years in the Regular Army included brigade command; Assistant for Central Europe, (OASD, ISA); and Military Assistant (Public Affairs) to the Chairman of the Joint Chiefs of Staff. He spent seven years on the West Point and US Army War College faculties. Following military retirement, he served for seven years as Director, Social Science Studies, Center for Advanced Studies and Analyses, Westinghouse Electric Corporation. He has contributed many articles on civil-military affairs to professional journals.

Yesterday's authority is gone, and tomorrow's authority doesn't exist yet.

—Raymond Aron, 1971

THE RESTLESS CONTEXT

Ever more challenging, the future looms from all directions. The scope and weight of potential change bid fair to provide the American military institution all, and perhaps more than, it will be able to handle.

Appreciation of the potential effects of change is often short-range, intermittent, and piecemeal—and too often, after the fact. This paper attempts to have peering into the murky future done more effectively by proposing the establishment of an agency, a Military Institute for the Future, to perform essentially a warning function for the military, or at least for the Army.

The challenges to the military arising from the dynamics of modern life are multilateral and comprehensive. They have become far too numerous to permit gross organizational imbalance by concentrating upon keeping up-to-date in some familiar sectors while ignoring other sectors. Two great areas can be (artificially) distinguished among all the context of change: one is the technological area, concerned with things, with materiel, with the physical sciences; and the other area is that of all else. Some would insist on identifying *three* areas, not two, namely (1) technology; (2) personnel and manpower; and (3) all the rest of the “nontechnological” area, that is, the nonmaterial world, the social and behavioral contexts and sciences. Which one of these is always the more

important context of change for the military institution, I could not, nor would I, choose.

It is the thesis of this paper that the nontechnological context embraces a host of social and cultural forces which emphasize people and include organizational dynamics, but which, as is well realized by the experts, extend well beyond those two limited perspective areas. Limitation of the nontechnological universe to problems of "manpower" and "organizational effectiveness" is too confining for the Army; such a limited approach may well prove truncated, providing to the Army less "return on investment" than it might derive via a more comprehensive approach. Part of this paper's purpose is to suggest an alternative approach—or rather, to suggest Army expansion of its institutional arrangements from current preparation to cope with selected channels of the river of change to a structure competent to cope with the entire challenging niagara.

It appears to me that many, not few, facets of culture, domestic society, international dynamics, institutions, organizations, and technology are presenting themselves as candidates for study. The time appears to have arrived to undertake to analyze the whole variable context of organizations and all their people, parts, and internal dynamics, and their interactions with their complex environments. Moreover, it also appears that the time has come to examine the feasibility and desirability of constructing a monitoring system across the entire spectra of the social and behavioral sciences, as well as the natural sciences, the arts, and the humanities, for clues to important future developments likely to affect military people and organizations. Through various partial devices, such as graduate schools, this monitoring function is being performed now—but partially, sporadically, somewhat whimsically, and, beyond doubt, unsystematically.

GENERAL BACKGROUND

Several circumstances, mostly but not entirely self-induced, have hampered military maintenance of any *systematic* monitorship of trends and forces other than of the technological and, to a lesser extent, of what the military establishment tends to call "human resources" (in at least one document, "personnel" are referred to as "The Department of Defense's most costly resource"). Criticism of such terminology as allegedly reflecting an insensitive perception of people can be overdone,

for the military has also pursued much data-gathering for sensitive and humanitarian purposes related to its own people. Yet, there is some limited validity in such criticism, to the extent that modern perspectives toward people admit broader and deeper consideration of them than their mere status as "resources"—like money and materiel—or their relevance to organizational purposes. They possess social and cultural value beyond their organizational roles, a perspective which even the organizations involved, whether armies, universities, or corporations, must sooner or later come to appreciate and foster.

One primary root-area for this partial impersonality lies in the way in which research in general has been structured in the Department of Defense. During World War II, following the between-wars example of the Office of Naval Research, the armed forces, and the government in general, became enthusiastic converts to research and gave a quantum thrust to American research in multidisciplinary efforts, such as had been exemplified by the successful wartime multidisciplinary programs headed by Samuel Stouffer, later recounted authoritatively in the resulting four-volume classic, *The American Soldier*¹

Total national expenditures for Research and Development escalated spectacularly: 1940, \$74 million; 1950, \$1.2 billion; 1959, \$5.8 billion; 1963, \$11.9 billion.²

However, such efforts in psychology and other social and behavioral sciences were largely eclipsed when there was released the tremendous account of the Manhattan District project, its atomic bomb, and its associated sciences, all "hard," giving especial prominence to physics. Practically all government, and especially the armed forces, rushed anew to create research structures of extensive dimensions, almost exclusively devoted to the hard sciences, and with continued emphasis on physics. The principal purpose was the perfectly legitimate and prudent one of monitoring and furthering technological developments of potential interest to national defense in the dawning nuclear era. The "research empires" of the military came to be heavily staffed and controlled by hard scientists; their great mistake, if they made one, was in giving little or no attention to the social and behavioral sciences. It was not irrelevant that, after SPUTNIK, the Director of Defense Research and Engineering was elevated to be first among the Assistant Secretaries of Defense.

To be sure, attempts to divide knowledge into two categories—(1) hard science, and (2) all other—are not new; but in our time, the gulf between them widens, despite warnings. It is now 20 years since C. P.

Snow issued his then-famous warning, *The Two Cultures*.³ Yet one still encounters narrowly-conceived recommendations to the effect that highly-placed Defense officials of the future must become more technologically sophisticated, while nothing is said of their need to become equally sophisticated in the social and behavioral sciences.

In any event, when SPUTNIK suddenly appeared, back in 1957, the hard-science "obsession" of the Department of Defense was confirmed and renewed, as excited emphasis was applied nationwide to mathematics, quantitative research, and the sciences concerned with material things. I repeat that this emphasis pervaded the entire government. For many years, leading social and behavioral scientists pleaded for comparable attention in the National Science Foundation, the Office of the Scientific Advisor to the President, and similar government agencies, with pronounced lack of success. It was only in April 1977 that, for the first time, and only by some accidents of fate, a so-called "soft" scientist was appointed to head the National Science Foundation.

Meanwhile, the business and industrial world, allied with a few academicians (initially mainly economists, later psychologists) also mounted ever-intensifying searches for greater efficiency in production and administration.

The expanding searches met and passed many milestones. Recall Frederick Taylor and "scientific" management. Then "the human relations" approach of Douglas MacGregor, illustrated by his Theory X (people don't want to work and have to be driven) versus Theory Y (people do want to work; approached properly, they expend energy voluntarily).⁴ We are indebted to Max Weber and his successors for our understanding of bureaucracy.⁵ Abraham Maslow advanced our grasp of people's motivations with his concept of a 5-level hierarchy of man's needs.⁶ The names of influential thinkers, teachers, and specialists accumulated: Peter Drucker, Chris Argyris, Kenneth Boulding, Anthony Downs, Harry Levinson, Herbert Simon, Rensis Likert, Warren Bennis, and dozens of others.

As well as names, concepts succeeded each other, until a substantial literature accumulated: scientific management, productivity, human relations, centralization versus decentralization, vertical and horizontal hierarchies, humanitarianism versus authoritarianism, primary group dynamics, bureaucracy, total institutions, job enrichment, motivation, management by objectives, decisionmaking, planning, communications, operations research, PPBS, systems analysis, performance budgeting,

functional budgeting, zero-based budgeting, and numerous other systems, techniques, and perspectives. Some of these were innovative; some provided old wine in new bottles; some have been little more than slogans.

Some of these movements turned out to be more or less fads. We have seen numerous new styles pass rapidly in and out of fashion before (fads do not constitute genuine change, although they can be intensely—even irresistibly—advocated during their relatively short lives). Behavioral science—management science—organization science—all have harbored many explanations touted as keystone formulas; we have seen most of the keystones turn out to be moderately useful correctives, though far from serving as keys to the universe.

Not too many years ago, MBO (Management by Objectives) was hailed by some as the greatest thing to come down the management pike; now, it is still a useful tool, but magic is no longer expected from it. We all are familiar with initial and later appraisals of the Planning, Programming and Budgeting System (PPBS) of the McNamara era, supplemented by Systems Analysis, and (now) zero-based budgeting. At best, each modestly adjusts the way we look at things, and eventually settles back into being just one more tool in the analyst's or operator's kit bag.

While these multistage campaigns were being conducted to understand better many facets of the collective human enterprise, some areas received highly concentrated attention, while others were ignored. The overall improvement in understanding has been fragmentary and sporadic.

Among the many approaches to explanation of the nature of organizations,⁷ for example, Gross asserts that any social system consists of (1) people and (2) nonhuman resources (3) grouped together into subsystems that (4) interrelate among themselves and (5) with the external environment and are subject to (6) certain values and (7) a central guidance system toward future performance.⁸

Based on Ludwig van Bertalanffy's work, Russell Ackoff, among others, has given an excellent explanation of the concept of "System."⁹ The Army, for example, can be perceived as a great system composed of many component parts identifiable as subsystems and subsystems. Every part has some effect on the whole, but none has an *independent* effect. No subsets can be divided independently of the whole. Even though there is achieved the best possible performance of

each part of any system, these seldom add up to the best possible performance of the system as a whole. Conversely when a total system is operating as well as it can, its parts, relative to *their* objectives, are seldom operating at their best. The relationship between any two or more parts are as critical as the performances of the parts themselves.

Such explanations are usually helpful, if one knows about them. The military profession has generally managed to keep abreast of many. Nevertheless, many other aspects of organizational dynamics have been neglected or ignored, until gradual cross-fertilization occurred, if it occurred at all, in the form of unexpected insights from other fields. How many of such concepts have been exploited from fields outside the military?

THE DEPARTMENT OF DEFENSE AND PEOPLE RESEARCH

The military had developed selection and classification testing in World War I, and pioneered in many practices that spread to the society at large, such as the line-and-staff principle. In turn, the military services followed civilian developments with varying degrees of attention, giving closest attention to studies of leadership, primary groups, and—later—management. On the whole, there was little military interest in basic research or in refinement of theory relative to fields other than strategic equations, training, or aspects of personnel administration in which the military was already more expert than any other social institution. The principal discipline consulted by the military to serve as the “advisor” for all the social and behavioral sciences was psychology, in relation to training and to certain aspects (e.g., evaluation) of personnel administration, and also in relation to the early leadership assumed by psychologists in quantitative methods rapidly adapted to the computer.

Some moderate interest in human resources and behavioral research, mostly psychological, partly organizational, gradually emerged among the military, particularly under the surge of interest in human-relations approaches arising in the broad social context. The Army’s Operations Research Office (ORO), for example, sponsored valuable researches into behavior of men in combat; and the valuable work of HumRRO and, later, CRESS (Human Resources Research Organization and the Center for Research in the Social Sciences), was anticipated or paralleled in the Office of Naval Research and the Air Force’s RAND.

In Fiscal Year 1976, personnel costs totaled \$56.6 billion, about 61

percent of total Department of Defense (DOD) outlays. Of this amount, \$65.3 million were allocated to Human Resources Research and Development, or about 1/10 of 1 cent per each \$1 of personnel costs.¹⁰ In contrast, the rate of DOD expenditure on hardware research was 33 cents per each \$1 spent on hardware. To repeat the figures in different form, the DOD spent on hardware research \$330 per every \$1000 of hardware procurement, but only \$1 on people research per every \$1000 of payroll. This comparison was cited in a 1971 report,¹¹ and a 1977 report¹² noted that in 1976 the ratios involved were still about the same.

The 1971 report came from a task force appointed by the Department of Defense; it was composed of eminent specialists on manpower research, headed by Dr. Eli Ginzberg, of Columbia University. The valuable report rendered by the task force, *Manpower Research and Management in Large Organizations*,¹³ was substantially critical, though restrained in language. Among many observations, the task force noted the contrast cited above concerning allocations to people research, and cited these additional situations: Practically no research on "macro" problems, meaning essentially broad people problems that transcended the interests of a single Service; and great imbalance within such limited people-research programs as were being conducted by the armed forces, by overstaffing with psychologists (and a narrow range of psychologists at that, viz., clinical psychologists). The task force noted the overwhelming control of research empires by hard scientists, and cited anew the fact that critical decisions on *people* research were continually being made by persons whose expertise was in *weaponry*.

The task force offered a number of recommendations, one of the most important being to the effect that military manpower research should not be conducted and controlled by hard scientists but by modern "people" agencies embracing a full range of relevant disciplines, including social psychology, political science, sociology, anthropology, economics, organizational dynamics, operations research, and others. This commentator heartily agreed then, and still does.

One handicap, particularly notable in the sponsorship of research by military and practically all other government agencies, is also shared to some extent by all large institutions. That handicap, driven by the practice of fast turnover, is the *short-term viewpoint*. This is, of course, a fairly universal modern attitude, and notably American. In the course of a discussion by scientists from many nations in Bellagio, Italy, in June 1976, on the future course of technology and society, it was said:

... we are faced with the fact that many of the technological contributions to human progress today are aimed at short-term benefits at the potential expense of long-term resilience—leaving an ominous legacy for future generations.¹⁴

Most study and research efforts sponsored by the military suffer, in fact, from two general short-range deficiencies: (1) one was, and still is the one mentioned above, the overwhelming emphasis on short-term policy research, on “today’s policy needed yesterday,” in order to help resolve today’s crises with priority attention, letting next year’s potential crises wait for attention “until they actually arrive;” and (2) the second is a tendency throughout bureaucracies in research-administering agencies to seek to show results promptly on *current* problems, to report on research completed as evidence of success during one’s period of administration (usually limited to 2-3 years in the military), and to regard long-range problem possibilities as relevant only to unknown future incumbents, “long after I will have departed from this agency.”

The Department of Defense (DOD) still places responsibility for general supervision of human resources research and development (R&D) programming on the Director, Defense Research and Engineering (DDR&E).¹⁵ To identify areas of research interest, DOD uses a Human Resources Technology Coordinating Paper, dated March 30, 1963, which lists five related specific research areas: education and training, personnel systems and contemporary personnel problems, manpower systems management, human factors in system development and operation, and overseas operations and planning factors.¹⁶ In 1976, DDR&E separated all people research areas into three separate categories: technology (for training, training equipment, and human engineering); personnel and manpower; and the social science area of race relations, improved adjustment of minority groups, equal opportunity, and other contemporary issues. The vagueness of this latter category is consistent with the infrequency with which this category is mentioned anywhere.

DDR&E delegates heavily to the Advanced Research Projects Agency (ARPA) its responsibility to supervise all DOD Research; in turn, ARPA looks to its Human Resources Research Office¹⁷ for the management of R&D in areas “such as manpower, performance under stress, and man/machine interactions,” subjects too limited to constitute more than a minor proportion of the direct interests of this paper.

The three Services do about the same amount of people research in-house and contract out the rest (Army does in-house 50 percent, Navy 44 percent, Air Force 45 percent). In the Army, the Deputy Chief of Staff for Personnel (DCSPER) exercises staff supervision over human-performance R&D, mostly through its field agency, The Army Research Institute for Social and Behavioral Sciences (ARI), and the Human Engineering Lab of the Army's Material Development and Readiness Command.¹⁸ ARI has nine field units and two laboratories: The Individual Training and Performance Research Lab and the Organizations and Systems Research Lab. ARI is described as doing research, and exploratory and advanced development, in the social and behavioral sciences "... to establish a base of social science knowledge relevant to the Army and to use this base to help the Army solve problems."¹⁹

This latter description appears at first glance to relate rather closely to the theme of this paper, yet it does not appear that this charge to ARI is nearly comprehensive or systematic enough to perform the function proposed here.

A SUBJECTIVE EXPERIENCE

At this point, may I introduce a personal note by recalling that from 1970 until 1972, while employed by the Westinghouse Electric Corporation, I directed a two-year contract study for the Office of Naval Research on "The Impacts of Social and Cultural Change on the Navy in the Next Decade."²⁰

Our study team tried to discern, learn about, and describe studies, researches, speculations, insights, ruminations, and forecasts, across the entire spectrum of human activity, which might impact in some important way upon the Navy. We omitted a few fields, such as the Arts, but very few; in sum, we tracked down significant individual, group, and institutional change under a number of comprehensive headings: Philosophical, International, Technological, Bio-Medical, Social and Cultural, Organizational, National Orientations, Domestic Institutions, the Continuing Military Context, and Old and New Directions. There were some 75 subclassifications (e.g., "Education," "Economics," "Ethics," "International Relations," "Youth," "Women," "Leadership and Management," "The Individual versus the Organization"); we sounded some 1800 sources; and we identified some 400 potential impacts.

The study team was well aware that a number of agencies, especially the military, systematically monitored *technological* change around the world; the team was somewhat dismayed, however, to learn how few were any kind of social agencies that monitored social and cultural change *systematically*. An example of one of these rare agencies was established about 1971 by the life insurance industry, whose American Council of Life Insurance in New York supports an imaginative Trend Analysis Program (TAP), the mission of which is described as follows:

TAP is a model of another type of trend analysis. This type involves systematic monitoring of social, political, economic and technological trends and developments in an effort to understand the ways in which they interact, the directions in which they are moving, and the implications for the future.²¹

This Trend Analysis Program checks the broadest possible range of trends and developments in technology, economics, culture, etc., and tracks down all data with potential relevance to the life insurance institution, organizes and interprets the data, performs further analysis and research if appropriate, and disseminates interpreted data to interested offices and agencies throughout the life insurance industry.

This program, though considerably less complex than any counterpart military program is likely to be, could well serve as a model for comparable activities in the military institution. For example, at the outset of our Westinghouse project, only a handful of uniformed persons were aware of the work being done over several years by Professor George England at the University of Minnesota²² on the values of professional groups such as business managers, school teachers, and Army officers—analysis, comparison, significance. One exceptionally aware group used the data profitably in the Army War College's 1970 *Study on Military Professionalism*.²³

During the course of the Westinghouse project, the study team became aware of the potential significance of Professor England's data, and reported the appropriate findings in the team's report. As one example of subsequent use, in 1976 West Point was ordered to institute a formal course on Ethics, and other armed forces schools and colleges were forced to cast about for data on which to base introductory courses on Ethics; almost automatically, the Minnesota data of George England rapidly became directly relevant, timely, and valuable. That is, to those military agencies *aware* of the existence of the data.

Out of that experience, I developed the conviction that it was

imperative for the military as a whole (or for each Service separately) to develop soon some agency or procedure for the *systematic monitoring of social and cultural change* across a wide spectrum.²⁴ The key word is "systematic." All categories of human activity harbor at least a few trends of significance to the military, from which impacts could be expected, but which are frequently unknown outside very small circles.

ATTEMPTS TO COPE: OE PROGRAMS

As the pace of change has accelerated over recent years, the military has continued to address the challenge of anticipating the future in relatively piecemeal terms. Some of the discrete steps and some fragmentary relationships have already been described in relation to DDRE, ARPA, Human Resources Research Office, ORO, HumRRO, and the Army Research Institute for Social and Behavioral Sciences (established about 1971). The most recent operations-study-and-research area into which Army probes have been launched is Organizational Effectiveness (OE).

Though the upsurge of Army interest in OE is relatively recent, it is, in the opinion of this commentator, timely, even overdue. To be sure, in certain senses, OE is an ancient interest. All effective military forces have always maintained programs for assessing and measuring their effectiveness, and today maintain comprehensive arrays of audits, courses, check-up, tests, exercises, maneuvers, dry runs, and critiques.

It can be argued that the Army has implemented, quite as long as any other major American institution, humanistic concern with upgrading interpersonal relations and communications. Applause should greet the added, though overdue, intention to improve understanding of how organizations interact with people and with environment. Nevertheless, for some observers, a sense of *deja-vu* is almost unavoidable; for most, perhaps all, of the activities listed as elements of OE have been "around" for a number of years, developing gradually, as all knowledge develops. Frankly, some elements have been ignored for the most part, except within tiny enclaves in the military.

Some early 1977 descriptions of OE in Army literature may support a reaction that the literature and the program appear somewhat lacking in definition and confidence. One mid-1977 draft paper on OE "Preliminary Findings" contains a number of critical appraisals such as the following: "the OE Training Center is critically understaffed to meet the projected increases in student load;" "OE staffing is ad hoc

with serious shortfalls in trained personnel;" "the range of staff functions that need to be performed to support Army-wide OE efforts now exceeds the workload capabilities of OESO's who are being assigned under current HQDA policy . . .;" "service schools are generally not adequately staffed with sufficient OE or general behavioral science expertise to prepare, present, and improve OE and related instruction;" "there has been no concerted effort to expose NCO's to OE instruction and training, except for two ad hoc efforts;" "The US Army War College does not have any faculty with sufficient OE expertise to teach this subject;" "attempts to inform senior officers (O5 and above) of OE concepts have not been entirely successful;" "commanders generally define OE relative to their personal and limited experiences with OE activities, leading to a variety of definitions;" "no substantive action has been taken by MD(OCSA) to establish an OE consulting capability . . .;" "ODCSPER has not moved expeditiously to provide an adequate staff structure . . .;" "the introduction and development of an OE capability tends to be passive and frustrated at various levels in the Army . . .;" "OE research is susceptible to being eliminated from the R&D budget by congressional hostility to behavioral science research;" and so on. Some of these conditions have since been addressed. Still, if these are among appraisals by some of the program's best "friends," its practitioners, the program would seem to be not yet ready to withstand appraisals by critics.

Another document purporting to explain this new program says that OE is a systematic adaptation of Organizational Development, which often comprises the following elements or techniques: motivation; job enrichment or enlargement; management by objectives; team building; survey research and feed back; leadership; sensitivity training; and grid training. Overall, Organizational Development is referred to as a "management phenomenon" which has grown, since 1940, out of the group dynamics theories of Kurt Lewin.²⁵

To accomplish the objectives of the OE program, inclusion of these elements seems appropriate. But surveillance of these relatively few fields will not keep the Army up to date. There are numerous *additional* fields of human activity, harboring trends and forces with potentiality for impacting significantly on the Army in the future.

It may provide a valuable digression at this point to express some uneasiness with some of the references in the OE literature to "behavioral science" in the singular, and to "behaviorists," as though a reference were being made to some readily identifiable homogeneous

group. “Behavioralists” and “behaviorists” crop up in almost all disciplines outside the hard sciences. Actually, a “behaviorist” means generally someone in any of many fields who tends to discount history and documents and what people *say*, in favor of direct evidence of their *behavior*—i.e., what people actually *do*. The terms “behavioral sciences” and “social sciences” are both plural, referring to several scientific disciplines; both terms overlap in covering psychology, sociology, anthropology, and political sciences. (Political science, economics, and others are also often lumped together as social sciences. History is sometimes classed as a social science, sometimes as a humanity.)

Many behaviorists are also determinists—meaning believers that people’s behavior is mostly not of their own choice but is *conditioned response* to incentives and disincentives in their personal histories and *environments*.

Not all scholars are scientists. Not all scientists are innovators. Some scientists work in very narrow channels, from which few or no insights emerge. In some fields, a rare major advance may suddenly emerge, to shake us up for a generation; while in other fields, scientists may come up with frequent but only marginal advances. Different fields proceed at different rates, from glacial to meteoric. Some advances are incremental and puzzling; for a long time, no one knows that they portend, if anything. Some are pressing, imperative in the short run. Others raise long-range possibilities that may never be realized, despite heavy attention and resources devoted for years.

Despite considerable overlap, most of the activities cited in relation to organizational dynamics are *discrete* specialties, each worthy of having extensive time, up to a lifetime, devoted to it. The famous practitioners (Drucker, Maslow, Herzburg, Argyris, etc.) generally concentrated their efforts in a few subfields (e.g., Herzberg in Motivation and Job Enrichment). To produce genuine, constructive innovation in concept and method usually requires a lot of skill, analytical prowess, experience, special facilities, expert associates, trial and error, patient backing, and *time*. Thus, expectations that generalists will develop across *all* the fields included in OE programs may be optimistic.

One other feature about OE, as described in the literature, also gives me pause: the apparent expectation that a newcomer, after a short, quick “course in OE,” probably young and hence thin in experience, will be able to analyze unit problems better than the commander and staff *because he has a detached stance*. On the whole, on most

problems, I should expect detachment to be a handicap, compared to the vantage point of the commander and staff (who are presumably already in possession of much practical experience with that kind of unit). Is it over-optimistic to expect a detached observer to elicit critical data about the unit, beyond the ken or capability of the commander and his staff? I should expect that an OE specialist, after many years of on-the-job experience, might develop unique insights about *individual* units, but that, lacking such experience, he might be able to pass on to the unit insight of value to a number of similar units—insights developed by some kind of OE Center studying *type units* and types of organizational dynamics in order to identify innovations applicable to units in ways commanders might not have had the time or opportunity to think about.

More humanitarian, sensitive treatment of people, for example, has been advocated in the Army since World War II (and, in truth, long before); and much exhortation has gone into improvement and sophistication (e.g., “Let’s put the person in personnel,” and “People are not *in* the Army: they *are* the Army”) of personnel procedures. Much of the practical expertise available on how certain types of units work is already concentrated in some unit commanders (not all of them) and their staff officers and NCO’s (ditto).

The principal plus of the OE campaign might well be its recognition that new organization-rooted problems will always arise—that the Army institution and its major commands, units, and agencies are too complex, and are in some respects changing too fast or too subtly, for commanders to keep abreast of every significant nuance.

THE CONTINUING CHALLENGE TO THE ARMY

Practically all human activities are fated to be *organized*. For some time, great social organizations have been partly usurping the roles of family, neighborhood, community, even church; and their roles are burgeoning. We boast, for example, that the United States maintains the world’s largest educational system; do we realize that one-third of all education in the United States is now accomplished in work organizations?

Along with a few others, (e.g., universities, seminaries, resident hospitals, prisons) the Army is considered a “total” institution, with special characteristics that foster some differences in its members’ attitudes. For example, will future Army members expect more, or less, institutional paternalism from the Army?

In this paper, gradually increasing emphasis has been placed on the importance of expanded and timely research and study of organizations and their environments. Comprehensive study of the future, as suggested here for the Army, is envisioned as probing beyond organizations, beyond people perceived as "human resources," and beyond technology. Such study should probe all these areas of human activity, to be sure, but also others—industry, commerce, transportation, the family, sex and marriage, and any others affecting soldiers before and during their military service.

At this point, this paper risks suffocating or boring the reader by listing an unusually large number of examples of subjects and nuances that may prove profitable for the Army to monitor or explore. Some are of short-range interest, some of such long-range nature that they may never emerge into serious consideration. A profusion of subjects are listed for the purposes of indicating the breadth and depth of coverage considered suitable for monitorship by any modern military institution determined not to be found with too little and too late. Here and there is added an example of relevance of a specific Army manifestation of a general social change.

Enduring tension between the social values of freedom and equality (what kind and degree of discipline will be optimum for American military units in the 1980's?); American willingness to accept change, coupled with American unwillingness to control or direct it; recent findings in the nature versus nurture controversy; the decline of authority represented by teachers, pastors, parents, community, and government officials, and the upsurge of identity-autonomy-authority vested in self, peer groups, egalitarian and communal arrangements; the decline in individual and group dependence upon theistic explanations for meaning and purpose in life and upsurge in restless irrationality and immersion in cults (to what bases of authority can military authorities appeal?); parallel with decline in acceptance of authority, increase in alienation and loneliness; antithetical forces in spreading concepts of individual autonomy versus the increasing need for centralized data, planning, and direction arising from more complex, diversified mass societies (how much emphasis to allocate between the individual and the collective purpose?); the necessity for continued American performance of a world role, however expressed; the potentials for future conflict contained in nuclear proliferation, in dwindling world resources, in the proliferation of nationalism, in competition over access to products of the oceans and seabeds, in transnational pollution,

in the politics of envy, in the clash of economic and cultural systems (what kinds of forces, how equipped and trained, should the United States maintain?); the evolution of appropriate missions, weapons systems, mobility and logistics systems, and tactical concepts appropriate for various future combat environments; the implications of certain technological innovations in countries inimical to America (e.g., energy-projection weapons, manipulation of weather, antimatter devices, battlefield robots); the knowledge explosion and information overload (how can future leaders become adequately versed in *both* of "the Two Cultures"?); ubiquity of automation and electronic communication devices on a scale that erodes human presence and interpersonal contacts (social forces stress greater human communication, but technology lessens personal interchange); either massive increase or massive decline in interactions between the Army and its containing society; retraining specialists whose skills become obsolescent within a decade (e.g., accept lateral entry for new skills?); more explicit competition for heightened manpower skills comprising smaller proportions of total population, as technologically complex society increases needs for more, and more competent, specialties; challenges to deciding, well beyond the competence of medical practitioners and physical scientists, the most critical approaching issues of ethics, politics, economics, and social philosophy (e.g., replacement of body organs; triage; priorities for use of life-sustaining machines; extra-uterine fetal development; extension of life span; genetic manipulation; and chemical, mechanical, electrical, and telepathic-control of behavior); continued urbanization; earlier physical maturation (e.g., recruitment at earlier ages?); institutional responsibilities for lifetime education; childrearing systems outside the family; nonmarriage alliances and military support systems for "informal" dependents; young and elderly population sectors as expanding economic burdens on a work force that contracts as portion of total population; removal of statutory sanctions on homosexuals; relationship of a national health system to military medical systems; effects on institutional mores as representatives of minorities achieve full proportion of all ranks and positions (e.g., ethnic practices in conflict with organization norms); impact of increasing mass education on the stability of institutional goals and practices; relationships between over-education and undermotivation; widespread social approval of diversity in lifestyles (e.g., despite military tendency to emphasize conformity); demographic shifts, especially the predicated

decline in 14-24 age group; the ambivalent effects of television on youth; the prospect of a work ethic and a shorter work week and related increases in leisure time, including probably increased demands for leisure-time facilities (e.g., military leisure-time facilities will expand); underemployment and underutilization of teenagers; potential tensions in institutions as women achieve large-scale representation in executive and other supervisory levels in the military establishment; patterns of behavior affected by commonalities of life crises and other experiences in institutions; women in combat, combat-support, combat-service-support units (will female participation be on a token scale or full scale?); scarcity of detachment and objectivity (e.g., one of the most expensive services for hire in the future may be genuine objectivity); commitment to current members of organizations versus interests of future members and generations; pressures of expanding participatory democracy, and authoritarian versus pluralistic styles of leadership; the accelerating perishability of certain skills and expertise; the rise of paraprofessionals; lateral entry at middle and higher levels among social institutions; ad-hocracy in military structures; birth order and leadership potential; unconventional career paths; professional associations versus bureaucracies in the setting of certain professional standards within organizations; generational mind-sets in institutional frameworks; increasing importance in organizations of constructive but apparently heretical thinkers; the vulnerability of institutions to irresponsible "whistle-blowers;" political activism and military professionals (e.g., what significance would attend repeal of the Hatch Act?); a single military-civilian government career; dual capacity in the physical and social sciences among high military officials; mentorship of the arts as harbingers of social change; constructive interaction with the media; contract service as alternative to enlistments; alternative forms of achieving crisis discipline (e.g., surgical team, symphony orchestra, NASA mission); stress versus nonstress training; perceptions of the military absentee; channels, forms, and limits of tolerable dissent; viability of counter guerrilla doctrine; reliability of "tooth-to-tail" (combat-to-support) ratios; personnel turnover as the never-ending challenge to the training of effective American combat teams; and a thousand other trends, forces, and problems.

Certain concepts may still be disturbing, but can no longer be ignored by anyone intent upon understanding how social forces affect the interactions of people and environments. Concepts of predestination and determinism were developed long ago, as by Calvin,

Comte, and Sorokin; today, the concept of operant conditioning advanced by Professor B. F. Skinner, the American behaviorist probably best known around the world, is demanding, on its merits, greater and greater attention.²⁶ Despite considerable vagueness and fuzziness, and despite the absence of incontrovertible direct evidence and "proof," some of Skinner's tenets are difficult, or next to impossible, to deny or discredit. In essence, Skinner (like those determinists of old) holds that our behavior is mostly conditioned, or programmed, not by our free choice, as we think, but by the circumstances of our lives. If you want to change people's behavior, says Skinner, don't try to change the people; change their environments. Among other impacts, these concepts are closely related to the dynamics of organizations, which, for increasing numbers of people, constitute the largest part of their "environments."

Another pertinent example is provided by the work of Erik Erikson and Daniel Levinson (and others, and described in popular terms in the 1977 nonfiction best seller *Passages*, by Gail Sheehy) over the past one or two decades in identifying varying degrees of universality in the incidence of crises in lives and careers.²⁷ Every life and personality are to some extent unique; in other respects, however, each life is similar to those of *some* other people, and still in other respects, each is similar to those of *all* other people. The effects of certain life crises are predictable in some people, and so are some therapeutic patterns. The identifications of such common patterns have advanced our understanding of how people and environments interact.

It remains to consider the effects of time, and one of the most debilitating effects of the operation of time: perishability. It is not only oncoming change that institutions need to worry about, but also outgoing change and its results: obsolescence of familiar artifacts, skills, and methods. So that the prudent monitorship of change is not a one-time thing but a continuous process; for, in many fields, today's innovation is tomorrow's anachronism.

One specialist on career development, Professor Sammuel S. Dubin of Pennsylvania State University, estimates that the knowledge and skills of specialists become obsolescent within the following number of years after entering their professions: engineers, 5 years; medical internists, 5 years; computer technologists, 5-10 years; psychologists, 10 years or less. Managements must keep not only themselves up to date, but also encourage their professionals to do so; and, says Professor Dubin, merely reading trade or professional journals will not suffice.

About 20 percent of every working span ought to be spent on catching up and keeping up to date.²⁸

STILL ANOTHER PERSPECTIVE

Research and study along a hundred highways of knowledge are producing insights and explanations of great (in some cases, indispensable) value to the Army. Some of the results occur within separate Army research agencies; but most emerge from the host of research activities *entirely independent* of the military or the Army. Thus, the accumulation of knowledge is a multiple challenge now and will continue to be in the future. Much valuable work is proceeding that we could use; the chief trouble is that we *do not know* about a good deal of it, or we do not understand it, or we fail to see how it can be used for or against us.²⁹

As the result of analyses by the General Accounting Office of current DOD human resources research practices, it was charged in 1977 that the DOD does not manage its related activities effectively enough. GAO recommended that the DOD institute more effective management of human resources research, by identifying research results intended for application by making sure that reports of relevant research reach potential users in DOD; that communications be upgraded between researcher and users; and that more systematic usage of visits, briefings, and printings be developed to keep users up to date.³⁰

That GAO report and this paper are essentially in harmony and should reinforce each other.

If I were able to implement my druthers, I would take advantage of all the research and study activities currently underway in the Army, disturb them as little as possible in the course of reorganization, if any, and supplement them with those additional activities which are not now performed at all or performed inadequately, so that no major area of human endeavor, no matter how seemingly far-fetched, would escape some measure of surveillance. Thus, surveillance would seek to learn anything of potential usefulness to the Army—new facts, explanations, insights, relationships, actions, trends, perceptions, and thoughts—to include the following:

- the full range of trends and developments in science and technology, whether one calls them the “pure,” “hard,” “physical,” or “natural” sciences;

- the full range of trends and developments in society and culture relating to individuals, groups, organizations, and institutions, within the purview of the social and behavioral sciences;
- the arts and the humanities;
- continuation and expansion of Army techniques with manpower projections and personnel classification, which are apparently the most sophisticated techniques available in any modern institution;
- continuation and expansion of the Army's techniques for research and study of organizational dynamics—this is, of internal dynamics, of interaction of organizations with other organizations and with environments, and of interaction between, on the one hand, organizations, and on the other, individuals and groups;
- correlation of data on developments, to the extent possible, with the major Army missions, strategic concepts, tactical concepts, logistics, and administration.

The principal challenges to be overcome by the military institution in the entire American context of change involve these steps concerned with relevant data: acquisition, organization, analysis, and distribution.

A MILITARY INSTITUTE FOR THE FUTURE

What elements appear essential to make the proposed system effective?

The basic element is the data acquisition agency. A title is suggested: the Army Institute for the Future (or the Military Institute for the Future). It would not be exclusively, or preponderantly, oriented toward the hard sciences, as military research agencies are now oriented. This Institute could be established as a new independent agency, or as a separate new staff agency (not a staff division) reporting to a centralized Army element with power, such as the Director of the Army Staff, or the Deputy Chief of Staff, Research and Development (provided the latter were somewhat revised in emphasis to give as much emphasis and support to the social and behavioral sciences as to technology and the hard sciences), or to the Deputy Chief of Staff, Personnel.

Such an Institute might be *co-located* with the Strategic Studies Institute (SSI) as part of (or independent of) the US Army War College, for the broad terms under which a Military Institute of the Future ought to operate could be expressed in ways that would not disrupt SSI. It could be *co-located* with a historical agency. Or it could be

co-located with the Army Research Institute for Social and Behavioral Sciences, in Arlington, as being a reasonably compatible neighbor. Or, of course, it could be located independently, responsible to a central Army staff agency.

Or, with great organizational adaptability and sensitivity, such a Military Institute for the Future *might* be co-organized with the SSI or the ARI. Although I am prepared to make detailed recommendations, I do not pursue the matter of status or organization further, in this paper, except to observe again that the full range of the functions proposed for this Institute are not performed by any other agency today.

The unique element, the monitoring agency, the Institute itself, should systematically gather relevant data by generating lines of liaison to hundreds of domestic and foreign agencies in dozens of areas of social, cultural, and organizational change, and by interacting with other agencies monitoring technological change. Additional purposes generating widespread contact would be to uncover little-known but valuable work; and to exploit the advantages of diversity, in that several agencies might be working on the same problem but approaching it in different ways, and be able to exploit duplication and cross-checking as potential correctives by one agency in relation to another. One substantial Institute should be enough to provide necessary travel and observation of all sources of relevant activity; to subscribe to reports and documents; to participate in disciplinary, scholarly, and professional associations; to become acquainted with and become well-known to scientists, scholars, officials, specialists, etc. The agencies to be systematically monitored as part of this system should include the following:

- Research and study agencies of the Congress and of other Executive Departments; professional associations, academic centers, and associated research agencies; futurist centers; research and study activities of private and commercial agencies; well-known and little-known laboratories and think tanks (e.g., RAND, SRI, Battelle, TEMPO, Institute for Creative Leadership, Institute for the Study of Democratic Institutions, etc.).

- Comparable activities in United Kingdom, France, Germany, Italy, Japan, etc.

The Institute would appraise items of data for potential relevance to the Army; would classify and categorize items of data; would itself analyze the relevance, significance, and potential utility to the Army of

the item; or would refer particular items to other special Army agencies for evaluation of relevance, significance, and application (e.g., ARI, SSI, CAA, and a number of other agencies). No doubt from time to time, items would emerge in forms requiring further data or experimental application; such items would be referred to Army testing or experimental agencies for further development and analysis. Nothing in the perspective envisioning this Institute would preclude it from becoming an innovator itself along appropriate lines.

Assuming that *most* of the really valuable items of data would have broad application throughout the Army, information and explanation would be disseminated via Army networks, such as the following:

- The most important items would be cited in abbreviated regular publications intended for commanders and staffs, with more detailed explanations furnished more widely, especially to staff elements with substantial interest. This aspect needs careful thought and perhaps experimentation to overcome what is probably the greatest handicap in research and study: *getting key persons to read the results.*

- Current summaries, with items categorized according to staff agencies with likely interest, would also be disseminated to appropriate Army and other agencies.

The central Institute may find it feasible and effective to make available, usually on an *ad hoc* basis, certain mixed teams of specialists, of variable composition, to travel to regions or units having unusual difficulties in adjustment, for long or short periods of analysis and discussion. Such teams could conduct surveys, if necessary, or commission local agencies or staff to conduct surveys. It may be more reasonable to establish and operate a monitoring Institute for several years and see how it works out—whether *ad hoc* teams will prove adequate support to supplement the Institute's purpose, or whether resident field representatives are needed.

Informing this whole enterprise should be a spirit of inquiry, of determination to uncover any development among persons, people, groups, organizations, physical things, or interrelationships that may turn out to be of future value to the Army.

It may strike a number of readers of this paper that maintaining an Institute to assemble data on social and cultural developments is a luxury; that finding out what's going on is a simple thing to do; that we just naturally become aware of whatever we need to know. I'm afraid that such demurrers are not accurate. One is reminded of the farmer who declined to buy a new farming encyclopedia from a young

agricultural salesman, saying: "Hell, son, I don't farm half as good as *I know how to right now!*" Part of his interaction with his environment was that he did not want to know about more new developments. Most of us tend to prefer our knowledge universes undisturbed.

As knowledge explodes and overloads of unfiltered information inundate us, some critically relevant items do not reach us in whole or in part. In many important fields, much work is being done that we do not become aware of until long after, sometimes too long after, sometimes never. Over 5 years, for example, I must have asked a hundred military officers, many of them concerned with training, whether they knew of the possibly relevant results of a 1969-1971 experiment with nonstress training at the Los Angeles County Sheriff's Academy;³¹ not one had ever heard of it.

In the first of two volumes of *Daedalus* devoted to a survey of studies of contemporary learning, Stephen Graubard writes:

... To a greater or lesser extent, all scholars today live within disciplinary enclaves; they know best those languages, symbol systems, and modes of argument common to themselves and their professional peers. Because none of these is universally shared ... the full dimensions of contemporary research are little known.³²

So surfeited are we with incoming information in narrow furrows, that we decline to pursue many furrows; let alone many kernels of knowledge that do not reveal themselves easily. Some information reaches us in *disguised* or *uncertain* form, not in a form we readily recognize as relevant or immediately useful, so that we can't be bothered with it. As a result, much available information remains unnoticed, unrecorded, unorganized, unappraised, and unused.

This is the place to put in a word for another function not performed systematically anywhere, the interdisciplinary function of *integrating* new, partially-speculative knowledge with firm, well-established knowledge (i.e., the function of providing general overview and synthesis). In the 1971 Report of the Task Force on Manpower and Research, as cited earlier, it was astutely pointed out that macro-studies in the entire manpower field were not done or sponsored in DOD—meaning broad, generalist studies—but that there is a clear need that some *should* be done. The recent *Daedalus* volume touched the same sensitive point:

... To put the matter bluntly, there is too little support for the research of the generalist. The federal government, patron-in-chief of much that is

most commendable in monographic research, rarely supports such general inquiry.³³

What is suggested here is an Institute devoted to Army interests that attempts systematically to ransack every corner of the universe of possibly relevant empirical and intellectual activity in order to identify possibly useful data across the entire spectrum (not merely across a limited cluster of specified functions, fields, or categories) of men, groups, units, procedures, and missions of the Army. Such an agency should gather the data, correlate it, drop out the irrelevant, and assess the relevant. Is the source reliable? Are the findings reliable? Is the conclusion critically important, moderately important, or peripherally important to the Army? What other data relate to these new data? What should be done to refine these data? Who should know about these findings now, or next week, or next year? Can useful generalizations be produced? The ways in which such an Institute would carry out its responsibilities are many and varied. In some instances, the Institute would be an analyzer, in others a synthesizer, in others an innovator; and in still other instances, it would play all three or other roles.

One of the most valuable services it would perform for the Army is early *warning*—not only of the mere probability of approaching impact but also, in many instances, of the *direction* and *weight* of expected impact, and even of expected timing. For example, had long-range indicators of mounting racial tensions been taken seriously enough by military leaders, years or even months ahead of time, the tensions might never have reached the point of eruption on aircraft carriers and on Army, Air Force, and Marine bases.

One valuable service that such an Institute could perform for the Army (or, in a wider context, for the military institution) is the integration of numerous developments from numerous relevant dynamics into a coherent, continuously updated “battlefield of the future,” and a similar biennial project to update a conception of “the soldier of the future.”

As noted earlier, some respondents might regard the overall function to be performed by the proposed Institute as a luxury, a nice-to-have but dispensable aid. Others are more perceptive, and have already created monitoring agencies. We cited above the Trend Analysis Program of the life insurance industry; future-oriented agencies, often performing a lookout function for particular institutions, are proliferating. Approximately one hundred of the largest corporations

now maintain "house futurists" in order to stay abreast of developments. Over 20 states and cities do the same, such as California Tomorrow, Seattle 2000, Goals for Dallas, Hawaii 2000, Iowa 2000, and Goals for Georgia. Numerous centers have been established on campuses. A number of Executive Departments have considerable experience in screening and forecasting, such as the Census Bureau, the National Science Foundation, and the Federal Aviation Administration; and in 1975 an Ad Hoc Interagency Futures Group was organized. Even Congress, in order to relate advancing technology to legislation, established in 1972 an Office of Technology Assessment.³⁴ The military can hardly afford to delay indefinitely.

For some observers it may not be too fanciful, amidst several characteristics of modern institutional environments (e.g., the profusion of new knowledge, the complexity in organizing new and old knowledge, the difficulty in achieving reliable awareness of the sources of new knowledge, and so on), to perceive the proposed Institute as a modern counterpart of the scout and the sentry, the indispensable sentry performing surveillance for the Army in strange territory.

But posting of the sentries will be unsuccessful (not to mention induction of a false sense of security), if sentries are posted only along the eastern boundary, or only on every third day, or only without radar and telescopes, or observing only below the horizon. The oncoming challenges cannot be coped with unless the whole range of challenge is monitored fully and systematically.

It seems inevitable that every major social institution will have to establish an associated element to monitor the future, to confront the flood of information inundating society with a filtering function to extract what is significant to that institution. The critical question seems to me to be, not *whether* such an element will be established, but *when*.

That such a future-monitoring "institute" will be established eventually, I do not doubt. For the military institution, today may be premature; on the other hand, today may be rather late.

ENDNOTES

1. Samuel A. Stouffer, *et. al.*, *The American Soldier: Adjustment During Army Life*, 4 Vols, Princeton: Princeton University Press, 1949.
2. Steven R. Graubard, "Introduction," *Daedalus*, Summer 1977, p. xiv.
3. C. P. Snow, *The Two Cultures and the Scientific Revolution*, New York: Cambridge University Press, 1959, based on "The Two Cultures," *The New Statesman*, October 6, 1956.
4. Douglas MacGregor, *The Human Side of Enterprise*, New York: McGraw-Hill, 1960. Curiously, most people still think MacGregor invariably condemned Theory X and advocated Theory Y. Not so. While he preferred Theory Y in most circumstances, he felt that Theory X was preferable in some situations.
5. Max Weber, *Theory of Social and Economic Organization*, Translated by A. M. Henderson and T. Parson, New York: Oxford University Press, 1947.
6. Abraham Maslow, *The Farther Reaches of Human Nature*, New York: The Viking Press, 1971.
7. See, for example, Richard A. Johnson, Fremont E. Kast, and James E. Rosenzweig, *The Theory and Management of Systems*, (3d ed.), New York: McGraw-Hill Company, 1973; Harold V. Leavitt, *The Organizational World*, New York: Harcourt-Brace-Jovanovich, Inc., 1973; Peter F. Drucker, *The Practice of Management*, London: Heinemann, 1955; Harold J. Leavitt, *Management Psychology*, Chicago: University of Chicago Press, revised, 1964. There are hundreds of informative books in this field.
8. Bertram Gross, *Social Intelligence for America's Future*, Boston: Allyn & Bacon, 1969.
9. Russell L. Ackoff, "A Revolution in Organizational Concepts," *Naval War College Review*, January 1972, pp. 4-14.
10. US General Accounting Office, *Human Resources, Research, and Development Results Can Be Better Managed: Department of Defense*, Report to the Committee on Appropriations, House of Representatives, by the Comptroller General of the United States. April 22, 1977, p. 1 (referred to hereafter as "GAO Report").
11. *Manpower Research and Management in Large Organizations*, Report of Task Force on Manpower and Research, Defense Science Board, Office of Director, Defense Research and Engineering, Department of Defense, Washington, DC, June 1971.
12. *GAO Report*, p. 3.
13. *Manpower Research*.
14. "Science, Technology, and Society: A Prospective Look." Summary and Conclusions of the Bellagio Conference Organized by the US National Academy of Sciences, Washington, DC, June 20-27, 1976, p. 29.
15. *GAO Report*, p. 7.
16. *Ibid.*, p. 37.
17. *Ibid.*, p. 45. A query to ARPA by this author elicited the information that ARPA was created before DDR&E in DOD, having been established about 1958, after SPUTNIK, to handle space interests that subsequently passed to the National Aeronautics and Space Administration (NASA). A "Behavioral Science"

element (meaning primarily psychologists) was added about 1962, the designation of which eventually became the Human Resources Research Office and, as of May 1, 1976, the Cybernetics Technology Office.

18. *GAO Report*, pp. 45-46.

19. *Ibid.*, p. 46.

20. "Potential Impacts of Cultural Change on the Navy in the 1970's." Center for Advanced Studies and Analysis, Westinghouse Electric Corporation, Falls Church, Virginia, 7 Vols, August 1, 1972 (AD 749913). The Navy, primarily the Bureau of Naval Personnel, was quite pleased with this study, and formed a small task force to mine the study for suggestions for applications.

21. "TAP Report 15," American Council of Life Insurance (277 Park Avenue, New York, New York 10017), April 1977, p. 5.

22. George W. England, "Personal Value Systems Analysis as an Aid to Understanding Organizational Behavior: A Comparative Study in Japan, Korea, and the United States." Papers prepared at University of Minnesota for Exchange Seminar on Comparative Organizations, Amsterdam, Netherlands, March 1970; England, *et. al.*, *Personal Values and Military Administration*. Industrial Relations Center, University of Minnesota (for Office of Naval Research), August 1970; England, *et. al.*, *Personal Value Systems of Union Leaders and Corporate Managers*. Technical Report No. 5001. Center for the Study of Organizational Performance and Human Effectiveness, University of Minnesota (for Office of Naval Research), October 1970; England, *et. al.*, *Personal Value Systems of Navy Officers*, Center for the Study of Organizational Performance and Human Effectiveness, University of Minnesota, March 1971.

23. *Study on Military Professionalism*, Carlisle Barracks, Pennsylvania: US Army War College, June 1970.

24. Unfortunately, none of the Services could see the need for such a comprehensive effort at that time; even the Navy, the most sympathetic to the concept, preferred to handle specific problem areas in discrete fashion, and to rely largely upon eclectic project research (and such weak reeds as press coverage) for awareness of important change outside technology and hard science.

25. Kurt Lewin, *Resolving Social Conflict*, New York: Harper, 1948.

26. Professor Skinner has set forth his theories in a number of works. Two popularly known are *Walden Two* (Macmillan, 1948) and *Beyond Freedom and Dignity* (Knopf, 1971). An informative pro-and-con discussion, including Skinner's "Answers for My Critics," appears in Harvey Wheeler (ed), *Beyond the Punitive Society: Operant Conditioning: Social and Political Aspects*, San Francisco: W. H. Freeman and Company, 1973.

27. See, for example, Erik H. Erikson, *Childhood and Society* (W. W. Norton, 1950); "The Golden Rule and the Cycle of Life" in Robert W. White (ed), *The Study of Lives* (Atherton Press, 1964); *Insight and Responsibility* (W. W. Norton, 1964); and *Life History and the Historical Moment* (W. W. Norton, 1975). See also Daniel Levinson, *et al.* *The Seasons of a Man's Life* (Alfred A. Knopf, 1978); and Roger Gould, "The Phases of Adult Life: A Study in Developmental Psychology," *American Journal of Psychiatry*, November 1972; and Gail Sheehy, *Passages: Predictable Crises of Adult Life* (E. P. Dutton and Company, Inc., 1976).

28. Elizabeth M. Fowler, "Management: The Obsolescence of Professionals," *The New York Times*, June 24, 1977, p. D5.

29. Some explicit forecasts in this field alarm me and others, in relation to armed forces. Recent town-gown confrontations in Cambridge illustrate future tensions, as the city officials of Cambridge debate whether Harvard should be permitted to continue certain programs in genetic research within the city perimeter.

30. In the *GAO Report* referred to above, deficiencies were alleged in the way DOD manages "human resources research." The GAO team identified 374 reports on relevant research published and distributed in 1973, 1974, and 1975, and asked intended military users whether the reports had resulted in changes in their methods, regulations, training, or equipment. Some 210 (56 percent) of the reports were still being used; 141 (38 percent) were not used; and 6 percent were still being considered. Among reasons for nonuse were unawareness of the existence of the reports, belief that certain reports were intended for information only, or doubts about the reported results.

31. Recounted in *Behavior Today*, June 12, 1972.

32. Stephen R. Graubard, "Introduction," *Daedalus*, Vol. 106, No. 3, Summer 1977, p. vi.

33. *Ibid.*, p. xvii.

34. John Hamer, "America's Next Century," Editorial Research Report, *The American Future*, Washington: Congressional Quarterly, Inc., 1976, pp. 6-8.

OTHER RECENTLY PUBLISHED MEMORANDA

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